

Brief Biography

Dr. William R. Ott is the Deputy Director of the Physical Measurement Laboratory of the National Institute of Standards and Technology (NIST), a 200 million dollar organization with approximately 560 full-time employees and another 500 guest scientists and temporary staff. The Laboratory is recognized throughout the world for its excellent research and technical services. Laboratory staff have won almost all the major technical awards, including three Nobel Prizes in Physics.

Dr. Ott has served as Chief of the Radiation Physics Division of the National Bureau of Standards (now NIST), Chief of the NIST Electron and Optical Physics Division, Deputy Director of the NIST Center for Atomic, Molecular, and Optical Physics, and Deputy Director of the NIST Physics Laboratory. He was an Alexander von Humboldt Fellow at the Universität Düsseldorf in 1977-78, and is a Fellow of the Optical Society of America, the American Physical Society, and the Washington Academy of Sciences.

His personal research has been in the fields of electron-atom collisions, plasma spectroscopy, ultraviolet radiation technology, and optical metrology. He pioneered the use of plasma discharges as radiometric standards in the near and vacuum ultraviolet region of the spectrum and collaborated with NASA-funded principal investigators on the radiometric calibrations of space experiments, from the first Skylab measurements of solar radiation to the Hubble Space Telescope. He has published 69 technical papers and reports, given numerous talks, and participated in organizing conferences and workshops. From 2000-2011 he championed the Physics Laboratory's development of measurement methods and standards for applications in biophysics, quantitative medical imaging, and nanomedicine.

He is fluent in German, has a working knowledge of Italian, is an accomplished pianist, and enjoys tennis and running for exercise. He has been an active member of his church for more than 30 years.

Curriculum Vitae

Name: William R. Ott

Position: Deputy Director for Measurement Science, Physical Measurement Laboratory, National Institute of Standards and Technology (formerly the National Bureau of Standards), ES-1301 SES-IV

Date of Birth: March 29, 1942, Philadelphia, PA (USA)

Family: Married, three children

Education: 1963 B.S. Electronic Physics, St. Joseph's University, Philadelphia, PA
1968 Ph.D. Physics, University of Pittsburgh, Pittsburgh, PA

Clearances: Top Secret /SCI/DoE Q

Professional Experience:

1961-63	Coop Student, RCA Defense Electronic Products, Camden, NJ
1963-64	Graduate Teaching Assistant, University of Pittsburgh
1964-68	Graduate Research Assistant, University of Pittsburgh
1968-70	NAS/NRC Postdoctoral Research Associate, National Bureau of Standards (NBS)
1970-80	Research Physicist, Atomic and Plasma Radiation Division (NBS)
1977-78	Alexander von Humboldt Research Fellow, Universität Düsseldorf, Germany
1980-81	Scientific Assistant to the Director, National Measurement Laboratory (NBS)
1982-83	Program Analyst, Office of the Director (NBS)
1983-86	Chief, Radiation Physics Division (NBS)
1987-89	Chief, Electron and Optical Physics Division (NBS)
1988-90	Deputy Director, Center for Atomic, Molecular, and Optical Physics (NIST)
1990-10	Deputy Director, Physics Laboratory (NIST)
2010-11	Deputy Director for Measurement Science, Physical Measurement Laboratory (NIST)

Professional Organizations:

Member and Fellow, Optical Society of America (OSA)
Member and Fellow, Washington Academy of Sciences
Member and Fellow, American Physical Society (APS)
Member, Senior Executive Service (SES) of the United States of America
Member, NIST Chapter of Sigma Xi, and President, 1999

Honors, Awards, Fellowships:

1962	Sigma Pi Sigma Physics Honor Society
1962	St. Joseph's University Mathematics Honor Society
1967-68	NASA Traineeship for Graduate Studies
1968-70	NAS/NRC Postdoctoral Research Fellowship
1976	Silver Medal for Meritorious Federal Service, Department of Commerce

1977	NIST Certificate of Appreciation for Contributions to the National Measurement System Study, 1973-1976
1977-78	Alexander von Humboldt Research Fellowship (Germany)
1990	Fellow, Optical Society of America
1994	Certificate of Appreciation for Support of the Technology Applications Program, Ballistic Missile Defense Organization
1994	Certificate of Appreciation, Air Force Guidance and Metrology Center
1999	Certificate of Recognition for Past President, NIST Chapter Sigma Xi
1999	Leadership Award, Combined Federal Campaign, National Capital Area
2001	Sigma Xi Award for Outstanding Service in Support of NIST Research Scientists
2002	Gold Medal for Distinguished Achievement, Department of Commerce
2004	Physical Sciences Award and Fellow, Washington Academy of Sciences
2007	Fellow, American Physical Society
2008	Meritorious Executive Rank Award, Department of Commerce

Areas of Research Contributions and Expertise (55 publications):

Electron and Atomic Physics
 Atomic and Plasma Spectroscopy
 Plasma Diagnostics
 Vacuum Ultraviolet Radiometry
 Optical Radiation Standards and Optical Metrology
 Radiation Physics and Dosimetry
 Medical Imaging

Management Experience:

Deputy Director for Measurement Sciences, Physical Measurement Laboratory, NIST

The NIST Physical Measurement Laboratory has a \$200 million budget (FY11), with about 25% of its funding coming from sources outside of the Department of Commerce. There are about 560 professional staff and about another 500 guest scientists and temporary staff. It is one of six major organizational units of the National Institute of Standards and Technology. PML is focused on realizing and disseminating the national standards for length, mass, time and frequency, electricity, temperature, force, acceleration, pressure and vacuum, flow, acoustical pressure, and microwave, optical, and ionizing radiation by activities ranging from fundamental research in measurement science to provision of measurement services and standards.

The Deputy Director for Measurement Science administers the operations of the Laboratory as delegated by the Director of the Laboratory; advises the Director on budgeting, programming, administrative policies, and long-range planning for programs and facilities; effects new programs and program coordination among the Divisions, other Laboratories at NIST, and other organizations, particularly other Federal agencies; and develops and coordinates interdisciplinary measurement science programs involving research in atomic, molecular, and optical physics, radiation, thermo, biological and medical physics, and nano, microelectronic, and quantum information science,

Deputy Director, Physics Laboratory, NIST

The NIST Physics Laboratory has a \$70 million budget (FY10), with about 20% of its funding coming from sources outside of the Department of Commerce. There are about 220 professional staff in the

Physics Laboratory and another approximately 200 guest scientists and temporary staff. The Divisions of the Physics Laboratory are Electron and Optical Physics, Atomic Physics, Optical Technology, Ionizing Radiation, Time and Frequency (Boulder), and Quantum Physics (Boulder), the NIST part of JILA, a joint institute with the U. Colorado. Besides having operational and programmatic responsibilities, the Deputy Director directly supervises the manager of the Laboratory's Office of Electronic Commerce in Scientific and Engineering Data, the Laboratory's executive officer (its budget officer), its information technology and computer security officer, and several staff.

Deputy Director, Center for Atomic, Molecular, and Optical Physics, NIST

Similar activities as Deputy Director for the Physics Laboratory. The Divisions were Electron and Optical Physics, Atomic Physics, Molecular Physics, Quantum Metrology, Optical Technology Division, Surface Science, Time and Frequency (Boulder), and Quantum Physics (Boulder).

Division Chief, Radiation Physics and Electron and Optical Physics, NIST

As Division Chief (1983-1989): was responsible for planning and managing technical programs in radiation physics and electron and optical physics; maintained liaison with national organizations to develop mechanisms of cooperation; directed the recruitment and evaluation of personnel in the division and promoted training and personnel development activities; and served as principal advisor to the center director in broad matters of policy, programming, budgeting, personnel, organization, and interagency relations. There were as many as 50 professional staff in the Division, augmented by another 20 guest scientists and temporary staff.

Management Training:

Completed 3-week Program in Executive Leadership and Management, Federal Executive Institute; completed numerous training courses on such topics as Win-Win Negotiating, Conflict Management, How to Deal with Difficult People, Manage with Your Heart, Creative Listening, How to Manage People with Tact and Skill; completed Harvard's Program on Negotiation for Senior Executives.

Committee Participation and Leadership:

1973	Treasurer, NBS Employees Association, SEBA
1974	President, NBS Employees Association, SEBA
1978-80	Treasurer, 6th International Conference on Vacuum Ultraviolet Radiation Physics, Charlottesville, VA
1981-87	Member, International Working Group for Middle Atmosphere Program on Solar Spectral Irradiance Measurements
1981-85	Member, SBUV/METSAT Calibrations Advisory Committee, NASA Goddard
1983-84	Member, Organizing Committee, 8th International IAU Colloquium on UV and X-Ray Spectroscopy of Astrophysical and Laboratory Plasmas, Washington D.C.
1984	Treasurer, pro-tem Committee to form the International Radiation Physics Society
1984-86	Chairman, Calibrations Advisory Committee, NBS Center for Radiation Research
1985	Member, International Advisory Board for 3rd International Symposium on Radiation Physics, Ferrara, Italy
1987-88	Member, NBS Classification Committee, NBS Personnel Demonstration Project, and Chairman, Committee for Classification of Secretaries and Support Staff
1987-88	Member, Organizing Committee, 4th International Symposium on Resonance Ionization Spectroscopy and Its Applications, Washington D.C.
1988-2011	NIST Liaison with the SDI/BMDO/Missile Defense Program

1988-93	NIST Liaison with SPIE, the International Society for Optical Engineering
1989-95	Member, Review Panel on Optics Technology Applications for the SDI/BMDO Technology Applications Office
1989-97	Chairman, NIST/SDI/BMDO Annual Metrology Program Reviews
1989-2011	Member, NIST Personnel Reduction-in-Force (RIF) Board
1991-2009	Member, NIST Operations Board
1992-2011	Chairman, NIST Distinguished Speakers Colloquium Series
1992	Member, Program Committee for SPIE Conference, Ultraviolet Technology IV
1992	Member, DoC Interagency Committee on Classification Reform
1992	Member, Total Quality Management (TQM) Review Committee for NIST Planning and Engineering Office
1993-94	Member and Chairman, Tellers Committee, Optical Society of America
1994	Member, Program Committee for SPIE Conference, Ultraviolet Technology V
1994	NIST Representative, Interagency Subcommittee on Budget Priorities, Committee on Fundamental Science (CFS), National Science and Technology Council
1997-2001	Co-Chairman, NIST Committee on Society-Sponsored NIST Centennial Commemorative Events
1996	Member, Program Committee for SPIE Conference, Ultraviolet Atmospheric and Space Remote Sensing
1996-2002	Member, Awards Committee, OSTP Presidential Early Career Awards
1996-98	Member, Program Review Committee, Physics Department, St. Joseph's University
1995-2011	Member, NIST Small Business Innovative Research (SBIR) Selection Committee
1997	Co-Chairman, 3rd International Conference on Quantum Functional Devices
1999	President, NIST Chapter of Sigma Xi
1999	Chairman, NIST Combined Federal Campaign (United Way Campaign)
1999	Member, Program Committee, SPIE Conference on Ultraviolet Atmospheric and Space Remote Sensing: Methods and Instrumentation II
2000	Member, International Advisory Board, 4 th International Conference on Quantum Functional Devices
2000	Member, Program Committee, SPIE Conference on 100 Years of Optical Science and Metrology at NBS/NIST
2002-2003	Member, NIST Strategy Council
2004-2010	Member, NIST Biosystems and Health Strategic Working Group
2004	Member, AAAS Committee for Science Journalism Award
2006	Chairman, NIST Operations Board
2007-2008	Member, OSA Adolph Lamb Medal Committee
2007-2009	Co-Chairman, NIST Safety Operational Committee
2009-2011	Chairman, PL and PML Safety Councils

References:

Dr. Katharine B. Gebbie, Director, NIST Physical Measurement Laboratory (immediate supervisor)
301-975-4200, katharine.gebbie@nist.gov

Dr. William D. Phillips, NIST Fellow and 1997 Nobel Laureate, 301-975-6554,
william.phillips@nist.gov

Dr. Robert Celotta, Director, NIST Center for Nanoscale Science and Technology, 301-975-8001,
robert.celotta@nist.gov

List of Publications:

1. Charge Capture and Loss Cross Sections for Al^{+} and Fe^{+} in Gases, R. T. Brackmann, W. L. Fite, W. R. Ott, J. K. Layton, R. F. Stebbings, J. A. Rutherford, and P. Mahadevan, 4th Int. Conf. Phys. of Elec. and Atom. Collisions, Quebec (1965).
2. Design Parameters of Iodine Vapor Ultraviolet Photon Counters, W. E. Kauppila, W. R. Ott, and W. L. Fite, Rev. Sci. Inst. 38, 811 (1967).
3. Collisions of Aluminum and Iron Atoms and Ions with Gases in the Energy Range 5 keV - 2.5 MeV, J. K. Layton, R. F. Stebbings, R. T. Brackmann, W. L. Fite, W. R. Ott, C. E. Carlston, A. R. Comeaux, E. D. Magnuson, and P. Mahadevan, Phys. Rev. 161, 73 (1967).
4. Polarization of Ly α Excited in Electron Collisions with Atomic Hydrogen, W. R. Ott, W. E. Kauppila, and W. L. Fite, 5th Int. Conf. on Phys. of Elec. and Atom Collisions, Leningrad (1967).
5. Polarization of Ly α Radiation Produced in Collisions of Electrons and Hydrogen Atoms, W. R. Ott, W. E. Kauppila, and W. L. Fite, Phys. Rev. Lett. 19, 1361 (1967).
6. Polarization of Ly α Radiation Emitted by H(2s) Atoms in Weak Electric Fields, W. L. Fite, W. E. Kauppila, and W. R. Ott, Phys. Rev. Lett. 20, 409 (1968).
7. Sticking Coefficients for Atmospheric Gases Incident on Metallic Substrates, W. R. Ott and W. L. Fite, J. Appl. Phys. 40, 3402 (1969).
8. Polarization of Ly α Radiation Emitted in Electron Collisions with Hydrogen Atoms and Molecules, W. R. Ott, W. E. Kauppila, and W. L. Fite, Phys. Rev. A 1, 1089 (1970).
9. Excitation of Atomic Hydrogen to the Metastable $2^2S_{1/2}$ State by Electron Impact, W. E. Kauppila, W. R. Ott, and W. L. Fite, Phys. Rev. A 1, 1099 (1970).
10. Relative Transition Probabilities of the O I Resonance Triplet, W. R. Ott, Bull. Amer. Phys. Soc. Ser. II 15, 45, Chicago (1970).
11. Measurement of Transition Probabilities for O I in the Vacuum Ultraviolet, W. R. Ott, Bull. Amer. Phys. Soc. Ser. II 16, 204, Hartford (1971).
12. Measurement of Transition Probabilities of O I in the Vacuum Ultraviolet, W. R. Ott, Phys. Rev. A 4, 245 (1971).
13. Vacuum Ultraviolet Radiometry with a Stabilized Hydrogen Arc, W. R. Ott, P. Fieffe-Prevost, and W. L. Wiese, 3rd Int. Conf. on VUV Radiation Physics, Tokyo (1971).
14. A New Radiation Standard for the Vacuum Ultraviolet, W. R. Ott, P. Fieffe-Prevost, and W. L. Wiese, Bull. Amer. Phys. Soc. Ser. II 17, 383, Gainesville (1972).
15. A Recalibration of Spectral Radiance of Mercury and Deuterium Arc Standard Lamps in the

Near UV, W. R. Ott and J. D. Bartoe, J. Opt. Soc. Amer. 62,1372, San Francisco (1972).

16. A Ly- α Stark Broadening Experiment in a Pure Hydrogen Arc, Europhysics Study Conf. on Spectral Line Broadening and Related Topics, K. Behringer and W. R. Ott, Observatoire de Meudon, France, July 2-6, 1973.
17. VUV Radiometry with Hydrogen Arc. I. Principle of the Method and Comparisons with Blackbody Calibrations from 1650 Δ to 3600 Δ , W. R. Ott, P. Fieffe-Prevost, and W. L. Wiese, Appl. Opt. 12, 1618 (1973).
18. Far Ultraviolet Spectral Radiance Calibrations at NBS, W. R. Ott and W. L. Wiese, J. Opt. Engineering 12, 86 (1973).
19. Absolute VUV Radiometry with Hydrogen Arcs--Comparisons with Blackbody Calibrations, W. R. Ott and K. Behringer, 11th Int. Conf. Phen. in Ionized Gases, p. 412, Prague (1973).
20. Measurement of the Ly α Stark Profile in a Pure Hydrogen Arc, K. Behringer and W. R. Ott, 11th Int. Conf. Phen. in Ionized Gases, p. 396, Prague (1973).
21. Critical Analysis of the Lyman α Stark Profile Measured with a Pure Hydrogen Arc, W. R. Ott and G. Gieres, 2nd Int. Conf. on Spectral Lines, Eugene, Oregon (1974).
22. A New Transfer Standard for VUV Spectral Radiance Calibrations, W. R. Ott, G. Gieres, and W. L. Wiese, IAU Colloquium No. 27, 4th Conf. on UV and X-Ray Spectroscopy of Astrophysical and Laboratory Plasmas, Cambridge, MA (1974).
23. A New Transfer Standard for VUV Spectral Radiance Calibrations, W. R. Ott, G. Gieres, and W. L. Wiese, J. Opt. Soc. Amer. 64, 1405, Houston (1974).
24. H⁻ Shape Resonance Studied with an Arc Plasma, J. Slater, G. Gieres, and W. R. Ott, Bull. Amer. Phys. Soc. 20, 252, Houston (1975).
25. An Improved Method for VUV Radiometric Calibrations Using Hydrogen Arcs, W. R. Ott and G. Gieres, Bull. Amer. Phys. Soc. 20, 248, Houston (1975).
26. VUV Radiometry with Hydrogen Arcs. 2. The High Power Arc as an Absolute Standard of Spectral Radiance from 124 nm to 360 nm, W. R. Ott, K. Behringer, and G. Gieres, Appl. Opt. 14, 2121 (1975).
27. H⁻ Shape Resonance Studies in an Arc Plasma, W. R. Ott, J. Slater, J. Cooper, and G. Gieres, Phys. Rev. A 12, 2009 (1975).
28. NBS Ultraviolet Radiometric Standards, W. R. Ott, Symposium on Measurements for the Safe Use of Radiation, NBS-SP 456, 107 (1976).
29. Spectral Irradiance Measurements: Effect of UV-Produced Fluorescence Using Integrating Spheres, R. D. Saunders and W. R. Ott, Appl. Opt. 15, 827 (1976).

30. NBS Ultraviolet Radiometric Standards, W. R. Ott, Symposium, Invited Paper, 12th Informal Conference on Photochemistry, June 1976.
31. Far UV Radiometry - Survey of the National Measurement System, W. R. Ott, NBSIR 75-941 (1977).
32. Vacuum Ultraviolet Radiometry. 3. The Argon Mini-Arc as a New Secondary Standard of Spectral Radiance, J. M. Bridges and W. R. Ott, *App. Opt.* 16, 367 (1977).
33. Spectral Irradiance Standard for the Ultraviolet, R. D. Saunders, W. R. Ott, and J. M. Bridges, *J. Opt. Soc. Amer.* 66, 1097 (1976).
34. The Argon Mini-Arc as a Secondary Standard of VUV Spectral Radiance, J. M. Bridges and W. R. Ott, *J. Opt. Soc. Amer.* 66, 1097 (1976).
35. Spectral Radiance Calibrations Between 165-300 nm: An Interlaboratory Comparison, J. M. Bridges, W. R. Ott, E. Pitz, A. Schulz, D. Einfeld, and D. Stuck, *Appl. Opt.* 16, 1788 (1977).
36. Spectral Irradiance Calibrations in the Vacuum and Near Ultraviolet Using Standard Sources, W. R. Ott and J. M. Bridges, 5th Int. Conf. on VUV Radiation Physics, p. 123, Montpelier, France, September (1977).
37. Spectral Irradiance Standard for the Ultraviolet: the Deuterium Lamp, R. D. Saunders, W. R. Ott, and J. M. Bridges, *Appl. Opt.* 17, 593 (1978).
38. The Use of Gas Discharges as Ultraviolet Radiometric standards, W. R. Ott, J. M. Bridges, and J. Z. Klose, 14th Int. Conf. Phen. in Ionized Gases, *Journal de Physique*, Supplement #7, 40, CF-803, Grenoble (1979).
39. Vacuum Ultraviolet Spectral Irradiance Calibrations: Method and Applications, W. R. Ott, J. M. Bridges, and J. Z. Klose, *Opt. Lett.* 5, 225 (1980).
40. The Use of Deuterium Lamps as Radiometric Standards Between 115 nm and 350 nm, J. Z. Klose, J. M. Bridges, and W. R. Ott, 6th Int. Conf. VUV Rad. Phys., p. III-52, Charlottesville, VA (1980).
41. Spectral Irradiance Source Calibrations in the Vacuum Ultraviolet and Comparison with Other Standards, J. M. Bridges, J. Z. Klose, and W. R. Ott, 6th Int. Conf. VUV Rad. Phys., p. III-53, Charlottesville, VA (1980).
42. Calibrated Sources of UV Radiation for Laboratory and Space Applications, W. R. Ott, J. M. Bridges, and J. Z. Klose, 6th Int. Colloq. on UV and X-Ray Spectroscopy of Astrophysical and Laboratory Plasmas (IAU Colloquium #55), Toronto, Canada (1980).

43. Spectral Irradiance Calibration of Continuum Emitted from Rare-Earth Plasmas, G. O'Sullivan, J. R. Roberts, W. R. Ott, J. M. Bridges, T. L. Pittman, and M. Ginter, *Opt. Lett.* **7**, 31 (1981).
44. A Slit-Shaped Light Source for VUV Radiometry, W. R. Ott, J. M. Bridges, J. Musielok, and H. C. Hsu, 7th Int. Colloquium on UV and X-Ray Spectroscopy of Astrophysical and Laboratory Plasmas (IAU Colloquium 73), Dublin, Ireland (1982).
45. Monochromatic Source of Lyman Alpha Radiation, J. Z. Klose, J. M. Bridges, and W. R. Ott, *Appl. Opt.* **24**, 2263 (1985).
46. XUV Radiometric Standards at NBS, W. R. Ott, L. R. Canfield, S. C. Ebner, L. R. Hughey, and R. P. Madden, *Proceedings of the SPIE Conference on X-Ray Calibration: Techniques, Sources, and Detectors*, Vol. 689, 178-187 (1986).
47. NBS Measurement Services: Radiometric Standards in the Vacuum Ultraviolet, J. Z. Klose, J. M. Bridges, and W. R. Ott, NBS Special Publication 250-3 (1987).
48. Ultraviolet and Soft X-Ray Measurement Services at NBS, *Proceedings of NCSL Symposium on Innovation: Key to the Future*, 69-1 to 69-12 (1987).
49. Radiation Standards and Calibrations: Documentation Available from NBS *Proceedings of NCSL Symposium on Innovation: Key to the Future*, 29-1 to 29-5 (1987).
50. Radiometric Calibrations of Portable Sources in the Vacuum Ultraviolet, J. Z. Klose, J. M. Bridges, and W. R. Ott, *Journal Research of the National Institute of Standards and Technology*, **93** 21 (1988).
51. Advanced Metrology at NIST, William R. Ott and Robert L. Hinebaugh, 1991 *Proceedings of NCSL Workshop on Metrology: A Worldwide Language*, 176-182 (1991).
52. Atomic and Nanoscale Microstructures, *Proceedings of 11th International Invitational Symposium on the Unification of Analytical, Computational, and Experimental Solution Methodologies: Micromechanics and Microsystems*, Boston, W. R. Ott (1993).
53. Optical Measurement Methods Applied to Process Control, *Proceedings of Symposium on Optical Diagnostics in Manufacturing and Process Control*, Oak Ridge National Laboratory, W. R. Ott (1993).
54. International Benchmark Study of Standards Laboratories in USA, Germany, Brazil, and Japan, M. Desrosiers, B. Field, W. Ott, and R. Watters, U.S. DoC Internal Report, November 1998.
55. 100 Years of Optics at NIST: Science, Standards, and Service, W. R. Ott and T. B. Lucatorto, *Optics and Photonics News*, Vol 12, No. 2, February, 2001
56. 100 Years of Optical Science and Metrology at NBS/NIST, W. R. Ott, *Proc. SPIE, The International Society of Optical Engineering*, SPIE **4450**, 1-14 (2001)

57-69. Physics Laboratory Annual Report and Technical Activities, K.Gebbie and W. R.Ott, NIST Internal Reports, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2005, 2008.